

COVID-19 Task Team
ADHS Projections
ASU Center for Health Information & Research
(CHiR)

Draft

Status Update

21 May 2020

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Model, Monitor, Adjust Strategy

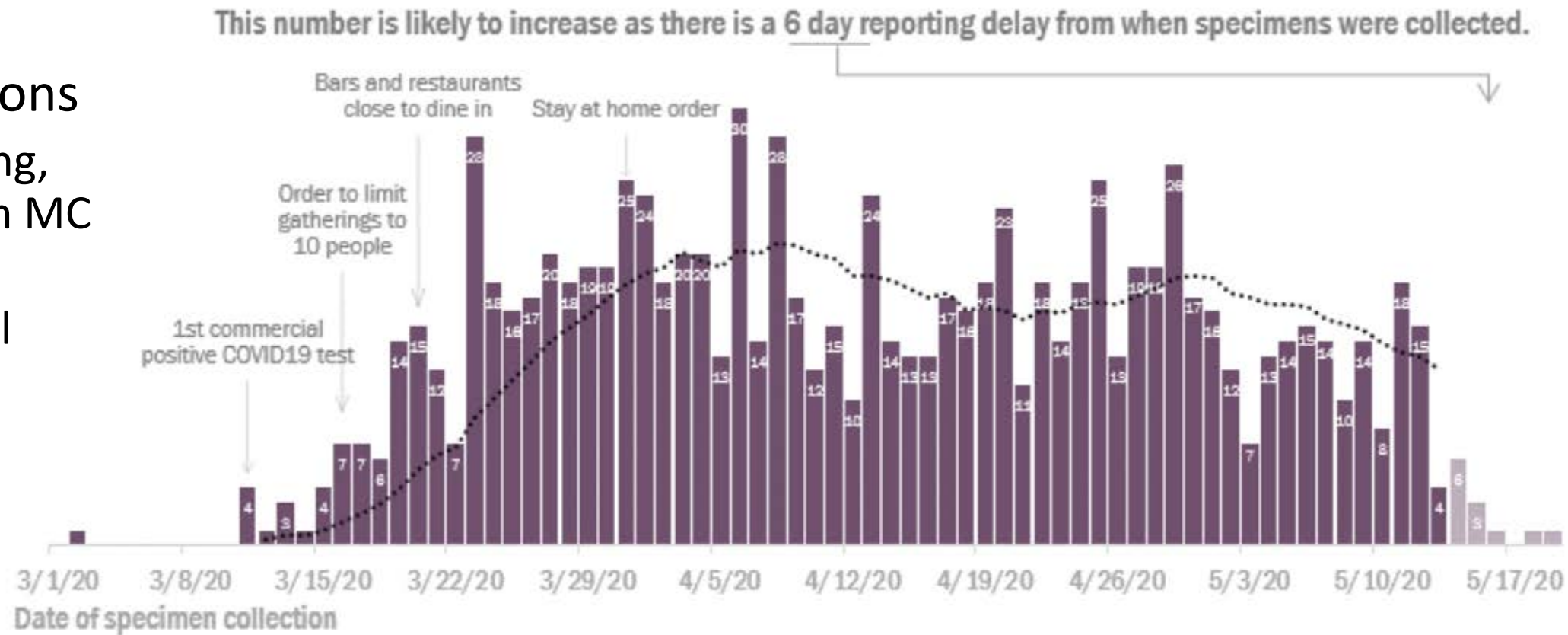
- Data based monitoring (surveillance)
 - Policy, social, behavior major **impact** to projections
- AHCCCS analysis
- Work with UArizona
- Meaningful groups
 - Subpopulations—ethnicity, age, vulnerability, geography
 - ...
 - Tests, hospital data, social determinants, behavior data, etc.
- Individual, basic and integrated models (AI) for vulnerability

Iceland Data

- Update since May 6, 2020 ...
- Sample tested approximately 350 per day
 - Approx. 4000 tests, $2+ = 0.05\%$
 - Currently 0 Hospitalized
- Multiply to AZ ≈ 4000 cases, lower estimate

Maricopa County Hospitalizations

- On April 12 hospitalizations
 - Start to long, flat peak in MC with SIP
 - Lag in rural areas



Types of AZ Tests

• Tests: 46926

PCR	39757
IgG	CHECK? 3908
IgM	CHECK? 473
IgA	CHECK? 372
Unspecified	89
Other (flu, other covid test, etc.)	2327

• Individuals Tested: 31537

Details of AZ Tests

- Individuals Tested: 31537 (all tests,

Insurance	-1	0	1	Count
NA	2099	16283	12981	31363
Private Insurance	1	5	44	50
Public Insurance	1	9	96	106
Self-Pay	NA	NA	NA	8

Test by Occupation

- *Preliminary* test results by occupation

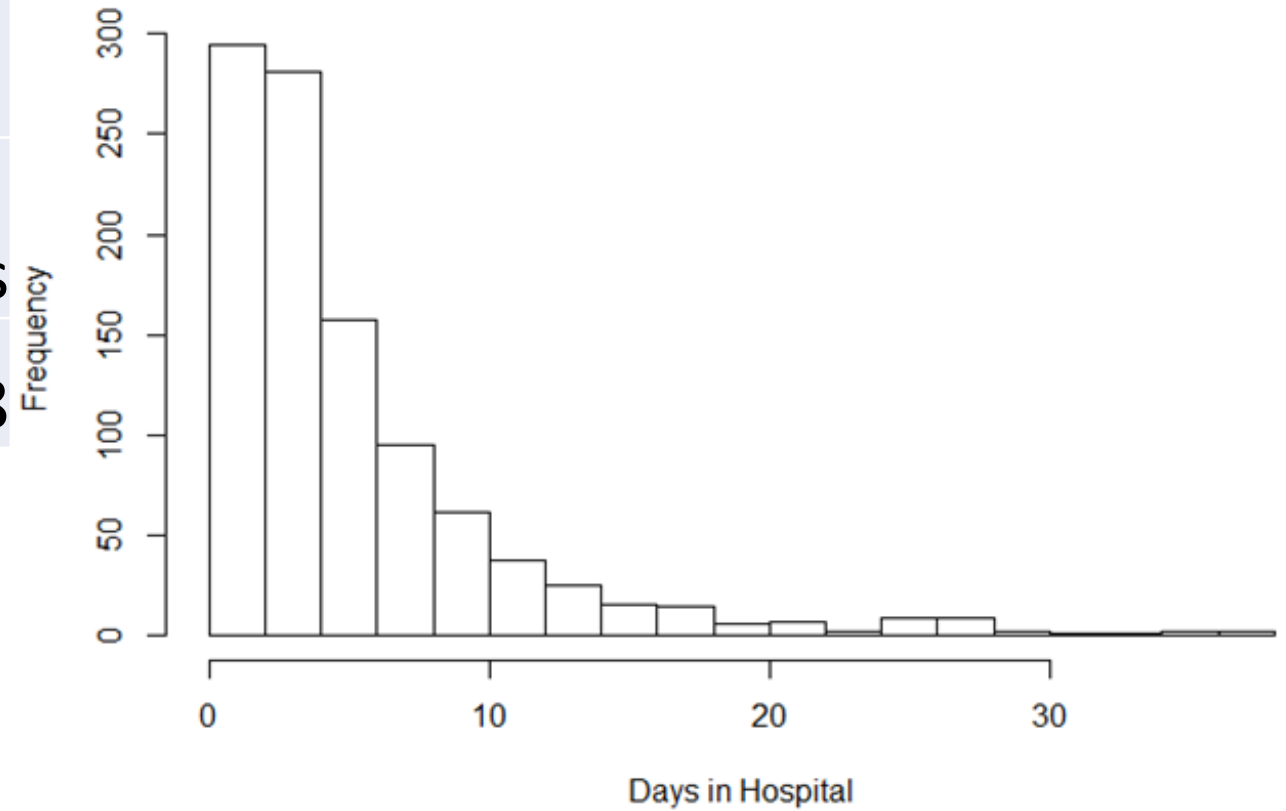
healthcare workers			
	0	1	rate
No	16238	12639	0.437
Yes	63	496	0.887

retail workers			
	0	1	rate
No	16300	13074	0.445
Yes	1	61	0.983

law enforcement officers			
	0	1	rate
No	16278	13063	0.445
Yes	23	72	0.757

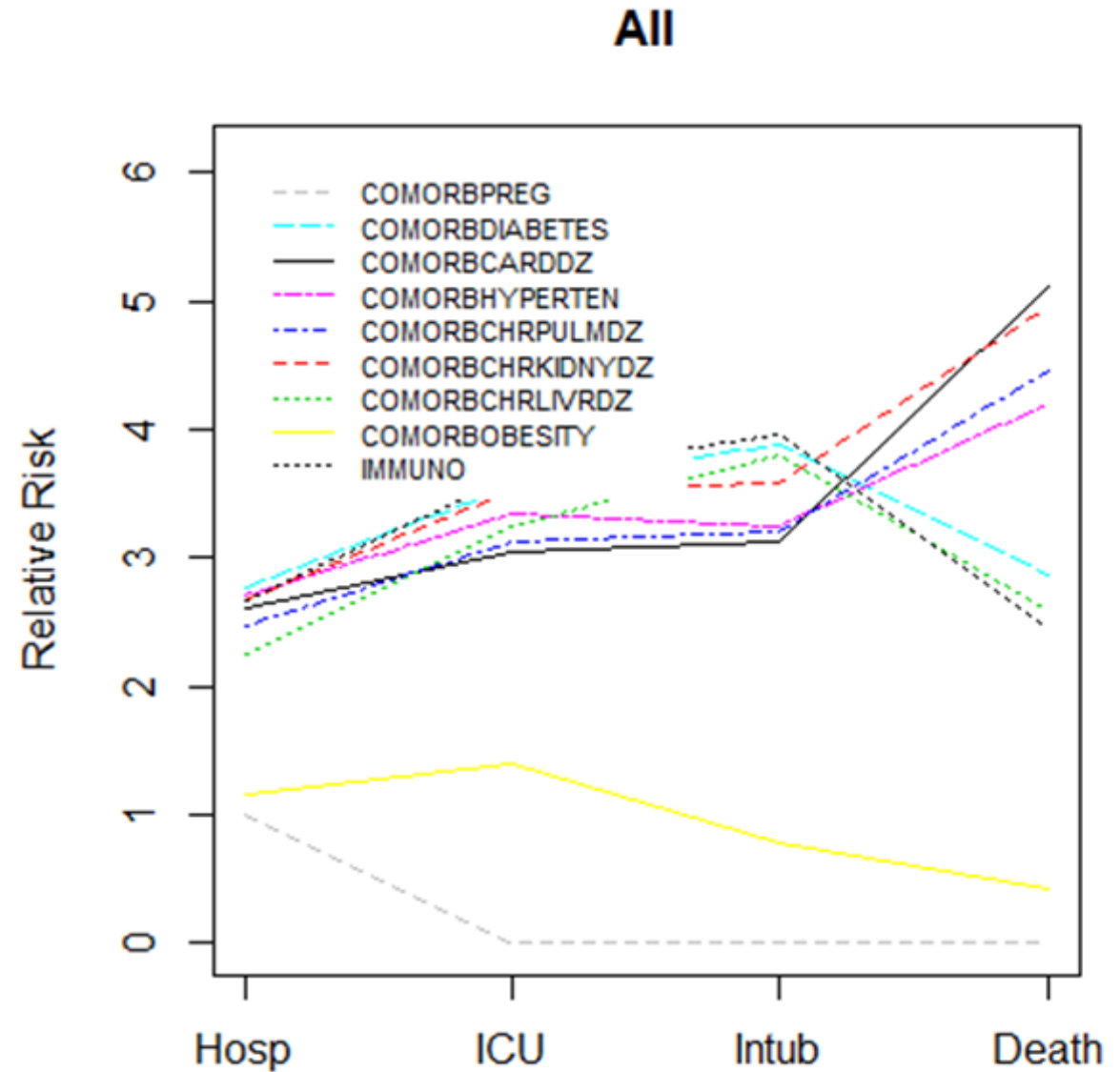
Hospital Stays

days in hospital							
Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	NA's	
1	2	4	5.8	7	38	678	



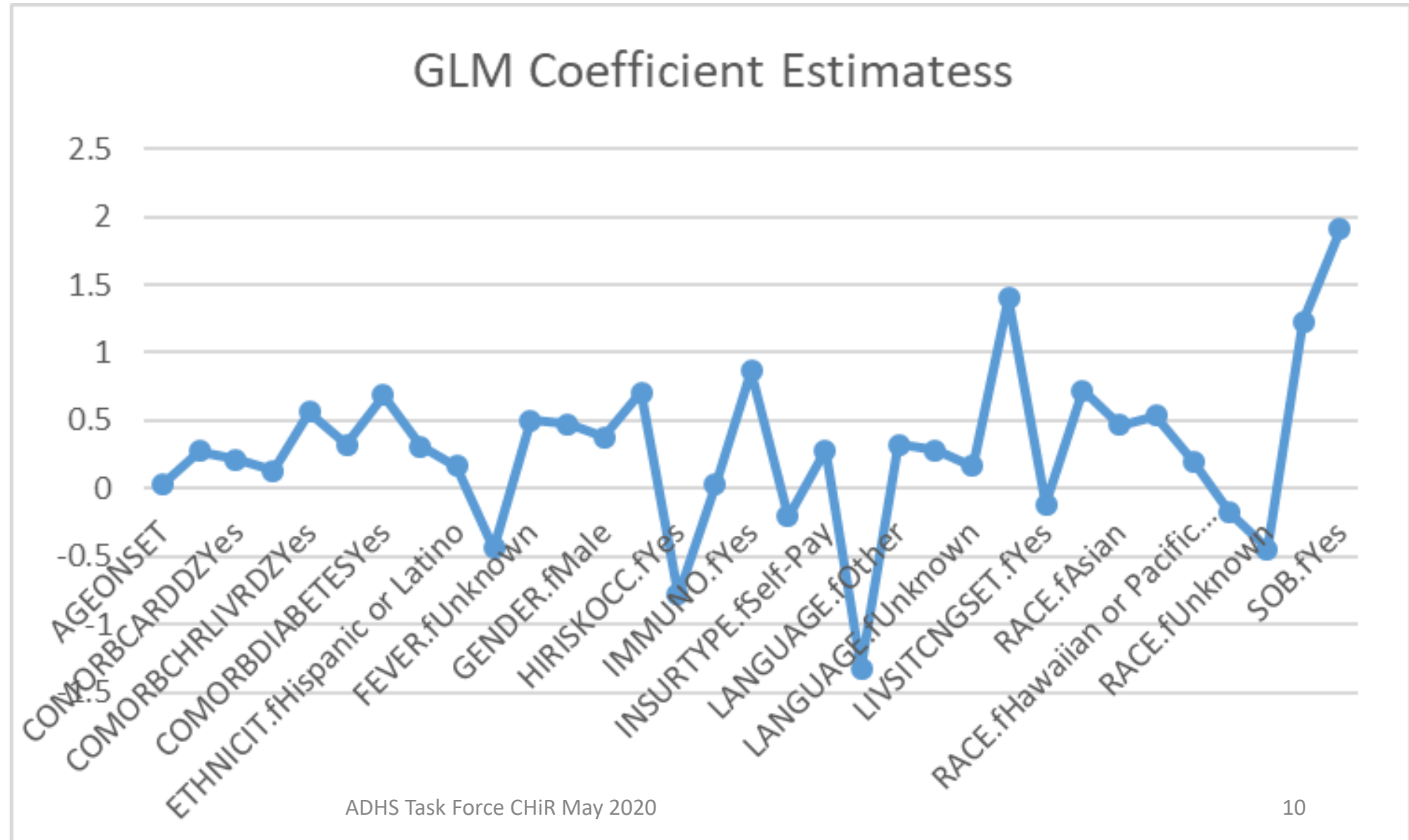
Relative Risk

- Preliminary
- Relative Risk of adverse outcomes with comorbidities



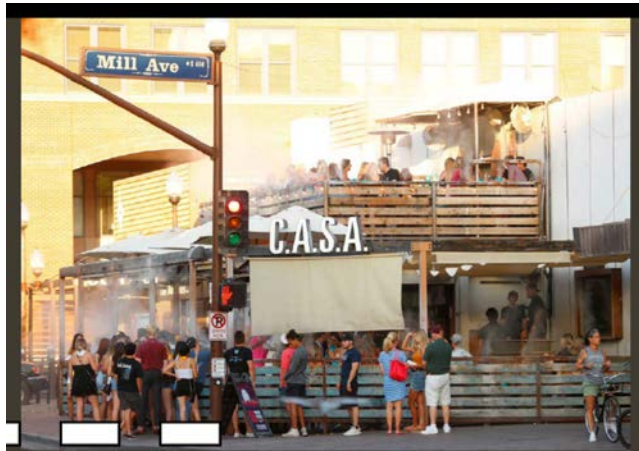
Models for Adverse Outcomes: Hospitalizations, ICU, Intubation, Death, Severity Scores

- *Preliminary*
- Example hospitalizations
- Coefficient estimates
 - + increase
 - - decrease
- More comprehensive to follow

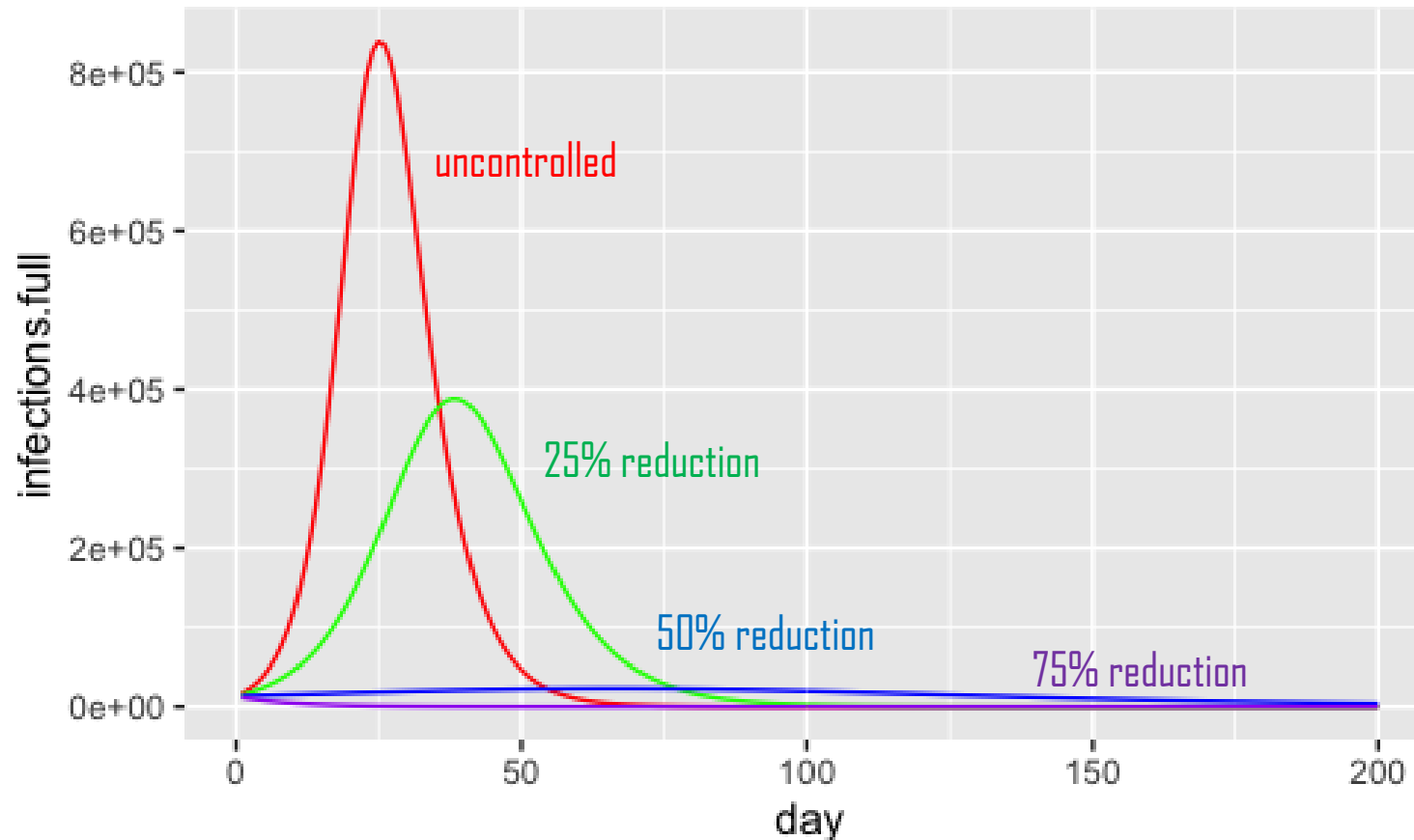


Real world vs models

- Human behavior is hard to model
- Different groups behave differently. Thus, have different R_0
- How sensitive are models to assumptions about human behavior?

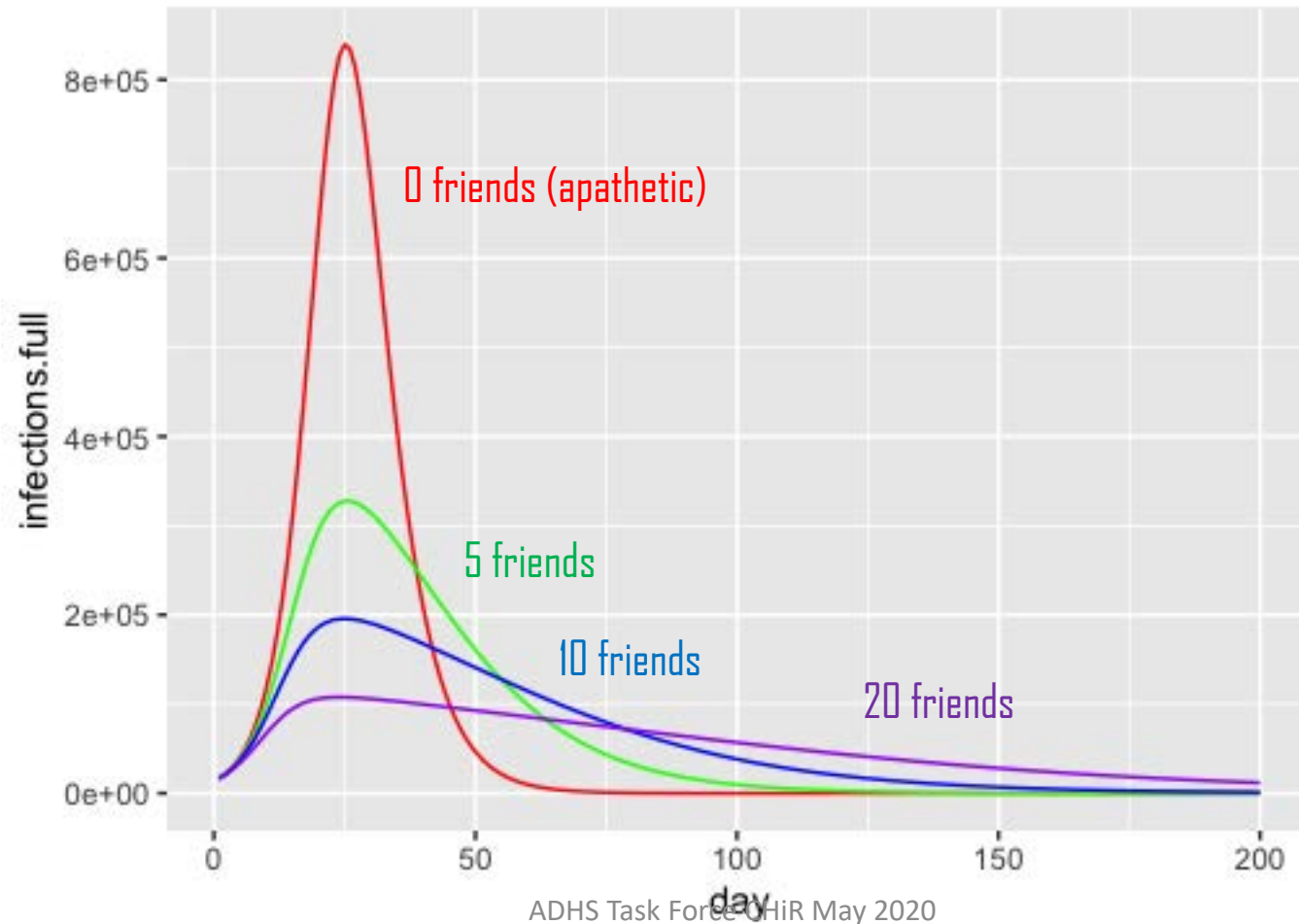


Assuming single apathetic population



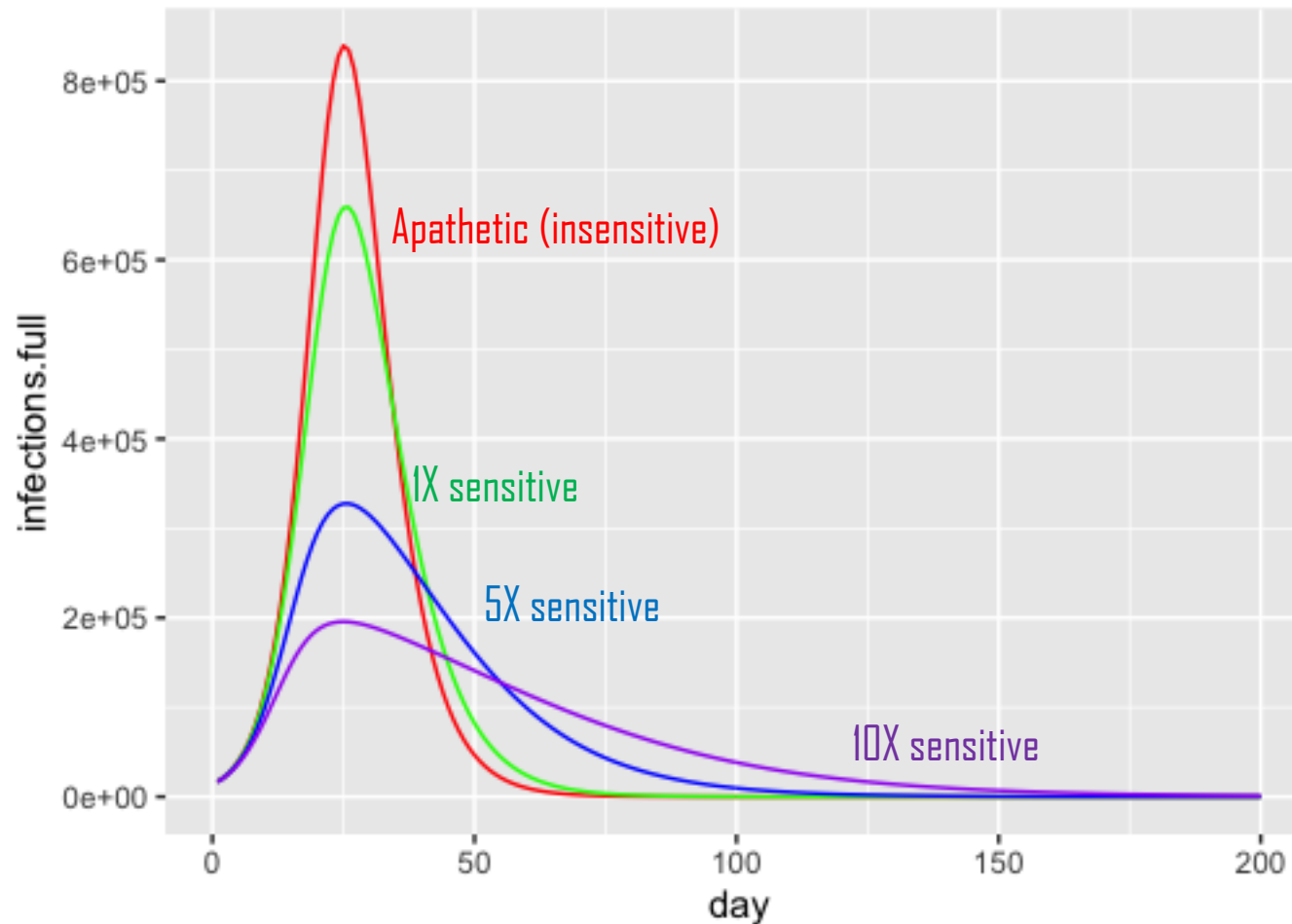
R_0 is reduced by some proportion as a result of social distancing, etc

Assuming responsive population



Assumption: a patient completely avoids infection while one of their friends is infected

Assuming multiple responsive populations



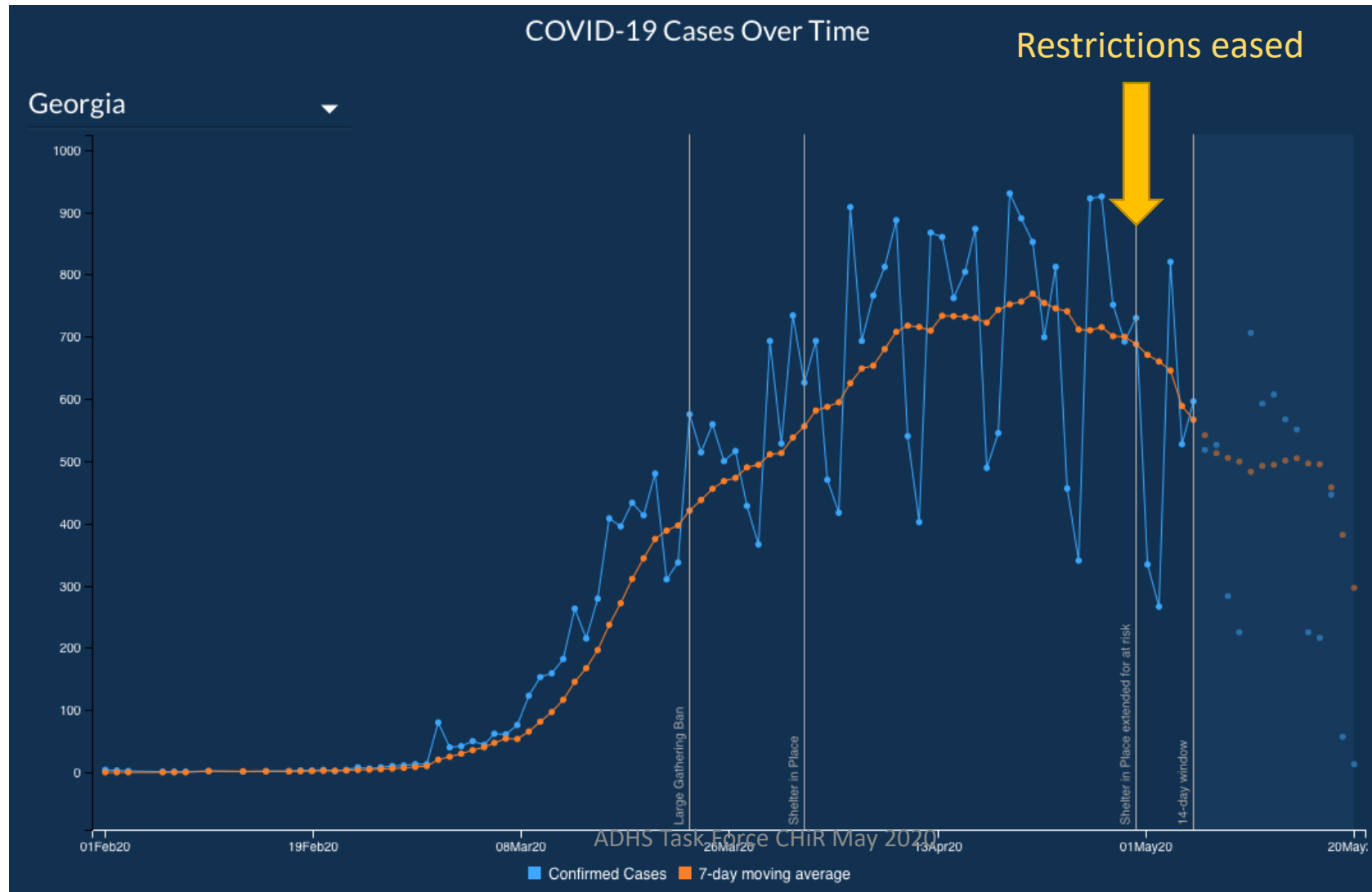
ADHS Task Force CHiR May 2020

Assumption: a patient reduces their risk based on the % of population infected.

e.g., if 5X sensitive, people reduce R_0 by 5% for each 1% of population infected

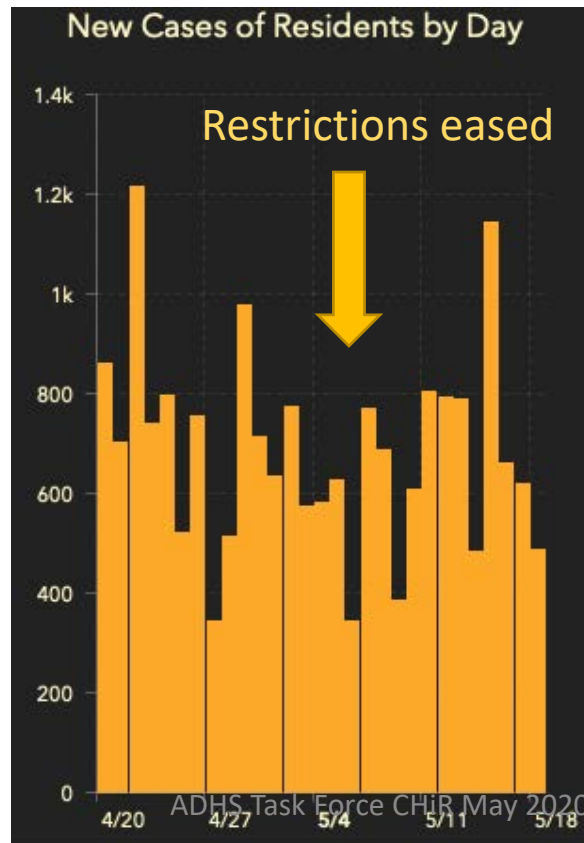
Georgia (early opening)

Leading indicator for AZ, can detect issues in advance



Florida (early opening)

Leading indicator for AZ, can detect issues in advance



COVID-19 Modeling Update

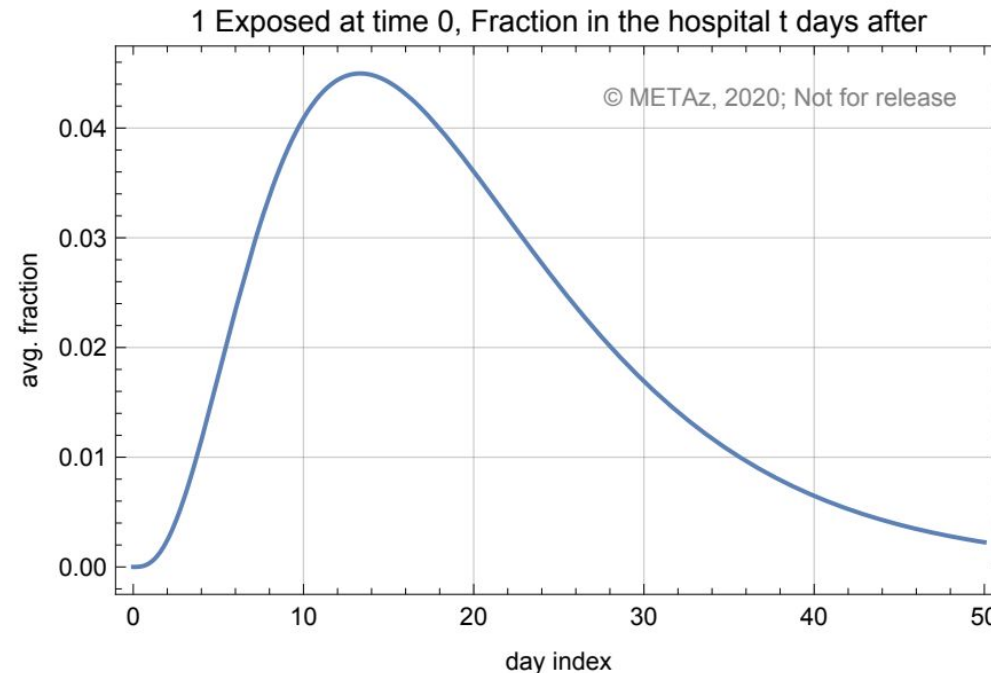
**Esma Gel, PhD, Megan Jehn, PhD, Anna Muldoon, MPH,
Heather Ross PhD, DNP, ANP-BC, and Tim Lant, PhD, MAS,**

May 14, 2020

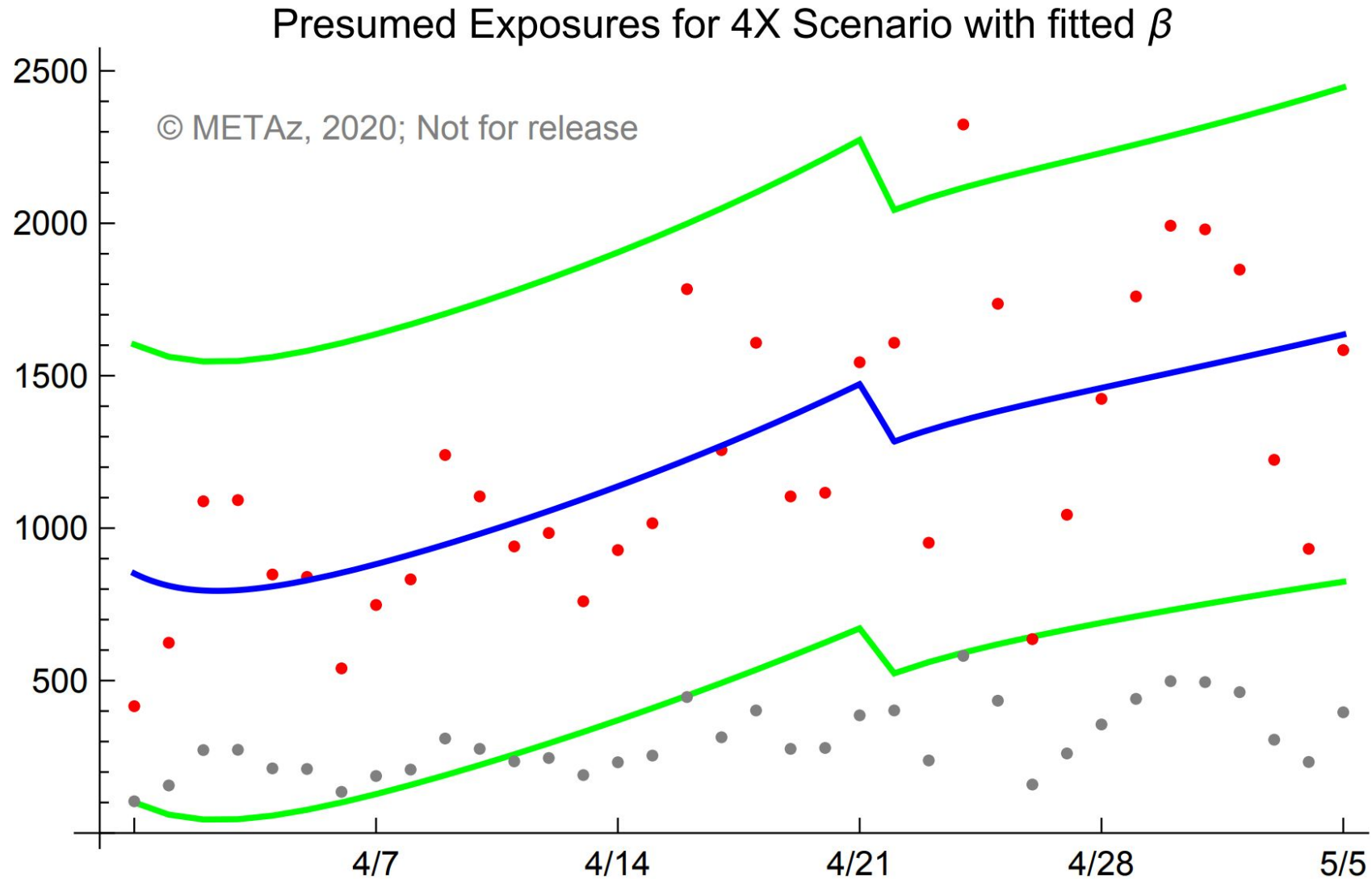
These projections are not intended to be predictions or quantitative guesses about what will actually happen in the mid-range (weeks-to-months) or long-term (months-to-years). They are intended to show the relative effects of changes in transmission, social distancing, weather sensitivity, current burden of disease, and other epidemiological factors. As more testing, tracing, and isolation come online and policies change, the estimates will change.

Time Distributions for New Exposures

- The delay from new exposures to peak hospitalization is approximately 2 weeks.
- It may require a month to resolve an infection and estimates include tail cases up to 2 months of hospitalization.



Detected Reduction in β (Backcast Exposure)



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COVID-19 Healthcare Demand Projections: Arizona

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 Trisalyn Nelson,  Heather M Ross

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